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- CNC Turning/Milling Fax +45 62616009
- Conveyor belt-systems E-mail fgm@fgm.dk
- Horticultural machinery www.fgm.dk

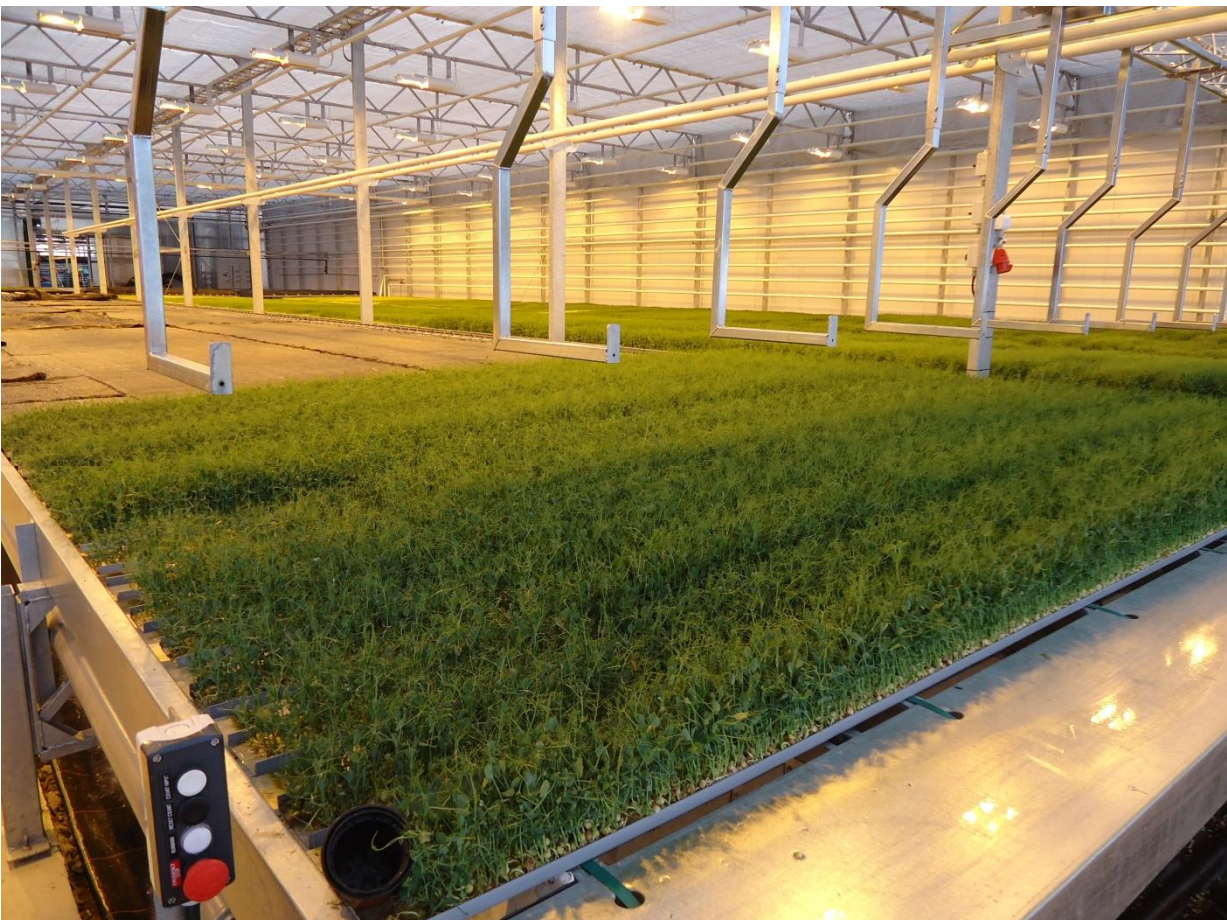


- Fertilizer mixers, irrigation systems Tlf. +45 65925600
- Gutter systems Fax +45 66164655
- Climate control www.danvan.dk
- Water disinfection E-mail danvan@danvan.dk

## Gutter systems

- ✓ Efficient internal transport
- ✓ Minimizes the amount of walkways
- ✓ Can be produced for all sizes of green houses
- ✓ Suitable for open gutters and pot gutters
- ✓ Adjustable distances between gutters
- ✓ Equal irrigation to gutters by CNL drippers

A Gutter system is more efficient and produces more lettuce, herbs and sprouts than ordinary growing lines at the same area.



Open gutters for sprouts.



With the automatic gutter system, the distance between the gutters is adapted to the size of the Lettuce. When the Lettuce are little, at the inlet end of the Gutter line, the distance between the gutters are 0,5 cm. As the gutters are moved towards the outlet, the distance between the gutters is decreased as the lettuce are getting bigger.



Gutters in the Gutter line

The gutter line has several irrigation zones, as the lettuce needs different amount of water as the lettuce get bigger.

Drip emitters adjust the water to the gutters, so the lettuce gets the same amount of water.



Irrigation into the gutters



## Transport Trolleys

Transportation of the emptied and washed gutters is done by trolleys running on pipes over the gutter lines. The transport trolleys are made as wireless automatic trolleys who transport the gutters to inlet end when start button are pressed or as manual trolley where a person has to walk with the trolley to inlet end.



Automatic gutter trolley

## Washing Machine

Gutter washing machines are placed between two gutter lines. When a gutter are placed at inlet/outlet it runs into the washing machine where cleaning liquid are sprayed with high pressure onto the gutter, when the gutter has gone through the washer, it returns while water are sprayed with high pressure to remove the dirt and cleaning liquid.



Gutter Washing machine with roller benches



## Pushing system inlet

### Loading.

A barrier pushes 4 gutters at a time into the gutter line each time a pushbutton are pressed. When the inlet end are filled, the barrier stops loading the gutter line.

### Auto.

The barrier pushes a gutter into the gutter line each time a gutter are taken out at the outlet end.



Inlet pushing system ready for loading



Inlet pushing system ready for pushing gutters into line

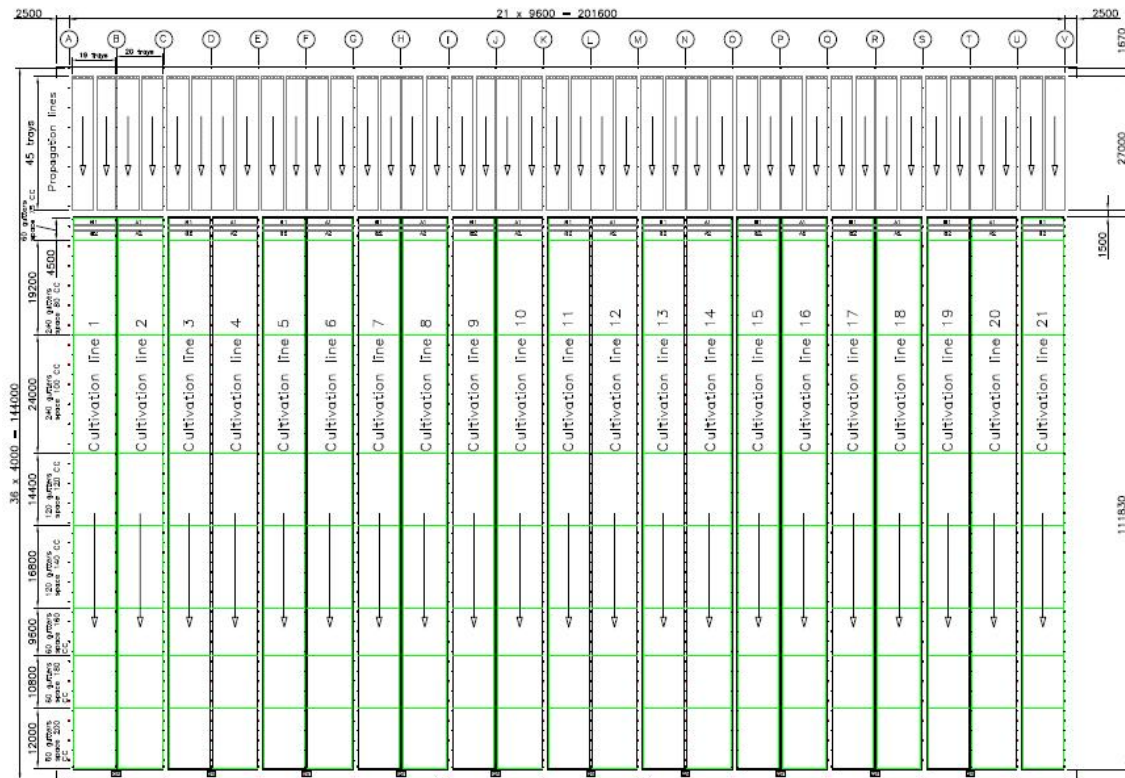
## Example of Greenhouse

Example of a greenhouse with gutter lines

This is a greenhouse consisting of 21 gutter lines, with the propagation area placed directly at the inlet end of the gutter lines.

The lines has 7 zones with different distance between the gutters and own irrigation for each zone.

This gutter line system produces more than 60.000 lettuces a day.



Example of greenhouse with propagation area and gutter lines.

Equipment for potfilling and irrigation



Soil filling machine



Seeding machine



Fertilizer mixer



Filtracion